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Photochemical immobilization of heparin, dermatan sulphate, dextran sulphate and endothelial cell surface heparan sulphate onto cellulose membranes for the preparation of athrombogenic and antithrombogenic polymers.

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Heparin (HE), dextran sulphate (DX) of molecular weight 40000 and 500000, dermatan sulphate (DS) and endothelial cell surface heparan sulphate (ES-HS) were immobilized covalently onto cellulose membranes (Visking dialysis tubes) using the photochemical heterobifunctional reagent 4-azido-1-fluoro-2-nitrobenzene (AFNB); 120 pmol HE/cm2 and 40 pmol DS/cm2, 3.4 pmol DX 500,000/cm2, 50 pmol DX 40,000/cm2 and 3.6 pmol ES-HS/cm2 were immobilized. The platelet adhesion of the modified membranes was measured in a modified Baumgartner perfusion chamber with citrated human blood at a defined shear rate. Membranes modified with DX 40,000 and DX 500,000 showed 80% and 30% platelet adhesion, respectively, heparinized and DS coated membranes showed 50% and 60% platelet adhesion, respectively, compared with a subendothelial matrix (100% platelet adhesion). ES-HS modified membranes showed no platelet adhesion.

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